

GEOGRAPHY OF THE NILE - 1

■ 4,145 miles

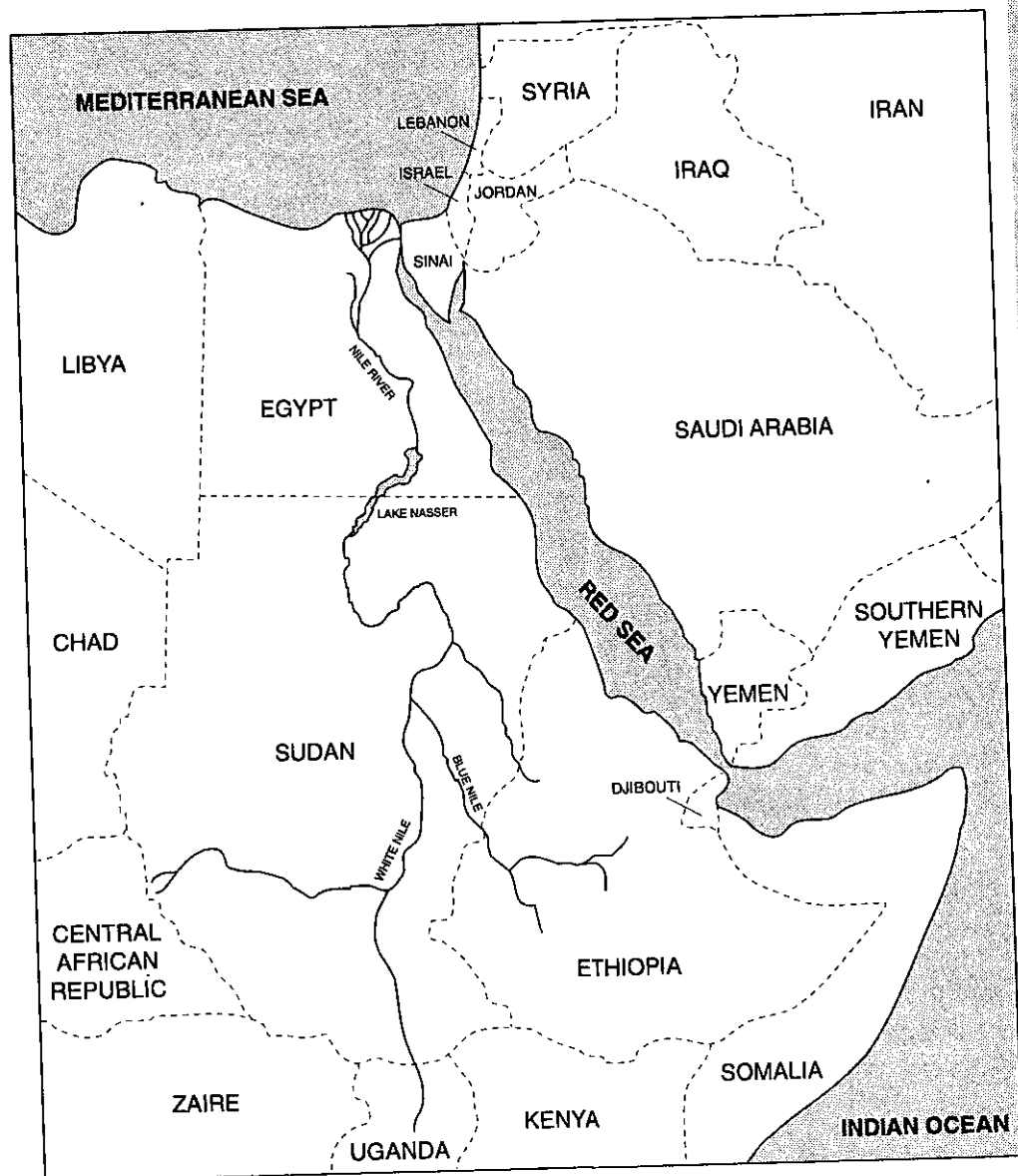
With an astounding length of 4,145 miles, the Nile River is the longest river in the world, and the only major river that flows south to north. The lifeblood of Egypt, the Nile originates in central Africa, where two river systems, the Blue Nile and the White Nile,

4,145 miles

begin their flow north. Fed by many smaller tributaries, the river flows through Rwanda, Zaire, Uganda, Sudan, and Ethiopia before reaching Egypt and then emptying into the Mediterranean Sea. The Blue Nile has its beginnings in the Mufumbiro Mountains in Ethiopia. The White Nile begins near the equator in the Ruwenzori Mountains on the border of Zaire and Uganda. These were the fabled "Mountains of the Moon," never seen by Ptolemy, but believed by him to be the source of the Nile. Ruwenzori means "rainmaker," an apt description for a place with 360 days of rain a year. Even in years of very low rainfall in East Africa, when the Blue Nile is almost dry, the White Nile flows strong. Lake Victoria is in Uganda, close to the source of the White Nile. When he reached this lake, the British explorer Stanley, one of the first Europeans to see Lake Victoria, mistakenly thought he had found the source of the Nile.

■ The White Nile and the Blue Nile

These two rivers join together at Khartoum, just above the sixth cataract in what is now Sudan. In ancient times Sudan was known as the kingdom of Nubia or Kush, with its capital city of Napata, and later, Meroe. Nubia extended from the sixth cataract to the first cataract, a distance of approximately 700 miles along the Nile.



GEOGRAPHY OF THE NILE - 2

■ Egyptian borders

For much of ancient Egypt's history, the southern border of Egypt was the first cataract at Elephantine. The cataracts of the Nile protected Egypt from southern attacks, just as the eastern and western deserts and delta marshes formed natural barriers to invading armies. Egyptians at various times in their history were concerned about invasions from the south. Around 1900 B.C., a series of mud-brick forts were built near the Second Cataract to guard against invasion from Nubia. They served as military garrisons, trading posts, and housing for the soldiers and their families.

■ Egypt's heart

At times ancient Egypt included parts of present day Sudan, Egypt, Israel, Jordan, Syria, and Lebanon, but its heart was the thin strip of land along the Nile River between the first cataract and the Mediterranean Sea. The Nile River valley was a long narrow corridor of fertile land, rarely wider than 12 miles and sometimes only one mile wide until it reached the lower Egyptian delta. The Nile on a map looks like a lotus (waterlily), with the delta blooming on top of the narrow stem of Upper Egypt. It could be said to be the largest oasis in the world, bringing water and life to what would otherwise be a bleak desert. The Greek, Herodotus, called Egypt "the gift of the Nile." An ancient Egyptian hymn to the god Hapi, god of the Nile, begins:

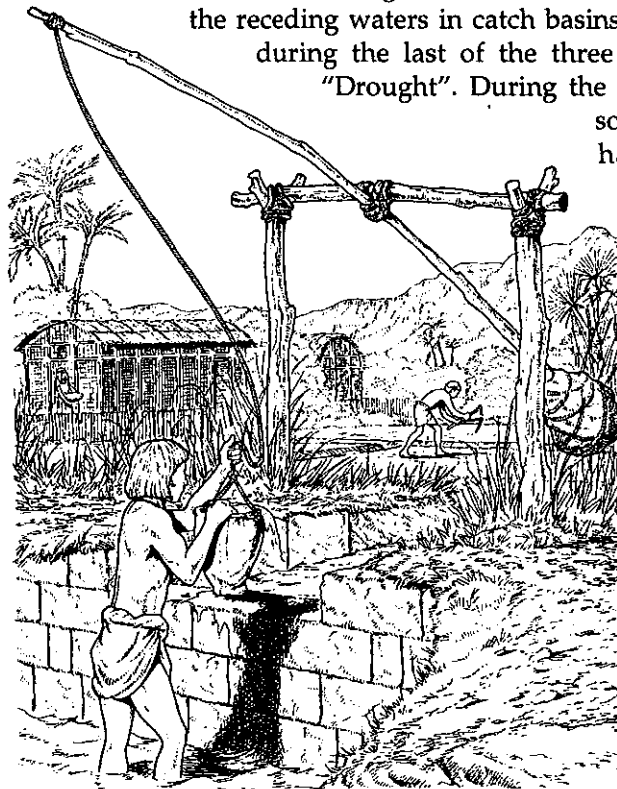
"Homage to you, O Hapi! You come forth in this land and come in peace to make Egypt live ... You water the fields which Ra has created; you make all animals live; you make the land drink without ceasing; you come down the path of heaven; you are the friend of meat and drink; you give grain; and you make each farm flourish ... You make the whole world to be ploughed up by the cattle so nobles and farmers can lie down to rest ... When you shine upon the earth, there is rejoicing, all the people are glad, the mighty man receives his meat, and every tooth has food to consume."

■ Rich soil

The richness of the soil came from the annual flooding of the Nile with its deposits of minerals and nutrient-rich black silt. The height of the floodwaters, determined thousands of miles away by the rains of central Africa, often meant the difference between feast and famine for the Egyptians. If the Nile was too high, it meant ruined homes and drowned villages. A "low" Nile, particularly if it occurred several years in a row, could mean drought and famine, for there would be less land to sow. The height of the flood was so important the Egyptians devised nilometers upriver to the south to measure the waters. A flood depth of 12 cubits on the nilometer meant starvation and death. A flood level of 16 cubits meant a year of plenty.

■ Three seasons

The Egyptians divided their year into three seasons based on the behavior of the Nile. The "Inundation," the time of the flood, was approximately from June to September. During this season the Egyptians often worked for Pharaoh or the temples on building projects. The "Emergence" of the land from the water covering them was from October to about February. The soil was moist throughout this time, the time for planting. The Egyptians would use shadufs to fill irrigation ditches and catch some of the receding waters in catch basins for later use during the last of the three seasons, the "Drought". During the Drought season they would harvest crops and thresh grain.



MINES AND QUARRIES

■ Early Egyptian building materials

Early Egyptian buildings were made of clay and reeds. Structures needing more support, such as mats and woven lattices, had bundles of reeds lashed together set in clay bases on either side. Wood was quite scarce, imported from Lebanon even in ancient times. By the First Dynasty, tombs and palaces were made of sun-dried mud-brick. Even later when palaces, tombs, and temples were made from stone, mud-brick was used to make the homes of the Egyptians.

■ Stone for building

The Step Pyramid at Saqqara was the first known monumental stone building in the world, constructed during the Third Dynasty. After its construction, stone was used almost exclusively for tombs and temples. Stone was transported on the Nile from quarries in Nubia—within Egypt itself—the eastern desert regions, and the Sinai.

Nubia and the eastern desert supplied the majority of diorite, dolerite, schists, porphyries, basalts, granites, quartzites and other hard stones although there were limited sources for some of these along the Nile. Limestone came from Tura near Memphis, sandstone and alabaster (calcite) mainly from Hatnub, and pink granite from Aswan.

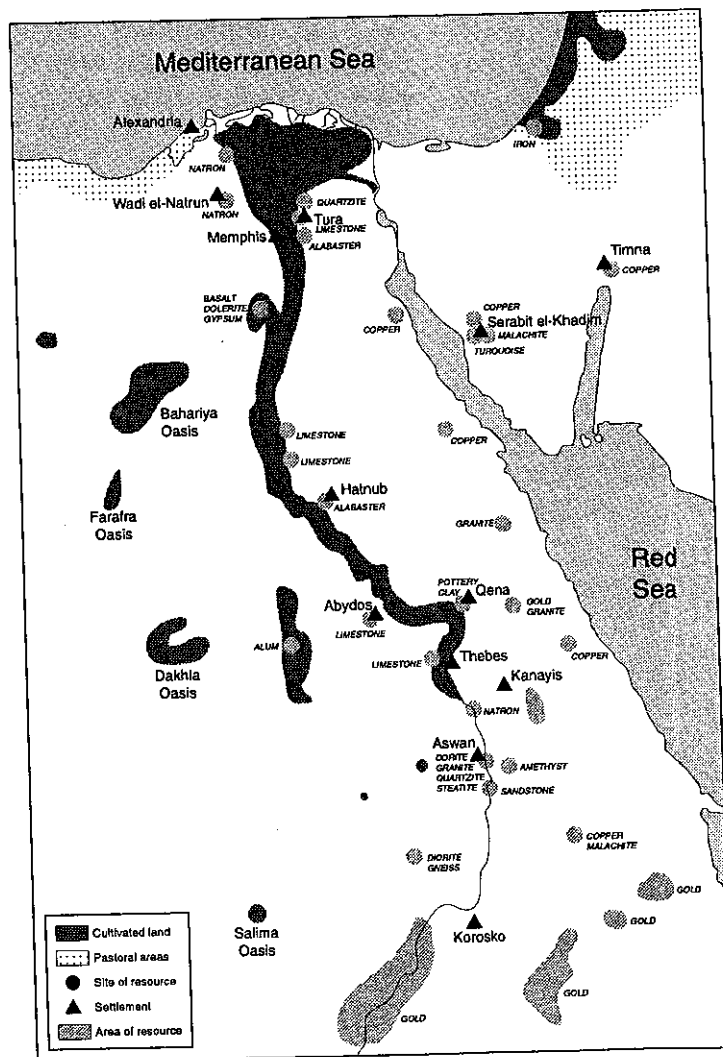
■ Quarrying

Quarries in Egypt belonged to Pharaoh, and Pharaoh determined which areas would be worked. Quarrying was done without the aid of iron tools. Grooves were cut in the rock with either a copper chisel and mallet or a diorite pick. Then wooden wedges were driven into the groove, and water was poured over them, causing the wood to swell and split the rock. Another method involved fire in the grooves to heat the rock. Cold water poured on the heated rock would cause stone to crack. The stones were rough dressed at the quarry, then hauled by sledges to the Nile, where they were transported to their designated location. Convicted criminals and prisoners were sent to some isolated quarries to do hard labor.

■ Other valuable minerals

Necessary to the embalming of mummies was the natron found near Wadi Natrun and at another site south of

Thebes. Metals such as gold came from mines in Nubia; iron (which was not used until almost the end of the dynastic period) from Meroe, the Sinai, and near Elephantine; tin, lead, and, copper came from the eastern desert. Egyptian control of the nearest gold sources was a main reason for their influence in the ancient world. One foreign ruler wrote to Pharaoh how it was well known that in Egypt gold was as common as dust. Turquoise and emeralds were mined in the eastern desert. Other precious commodities were obtained through trade. Examples: lapis lazuli, a beautiful blue stone from Afghanistan; silver from Syria; and obsidian, a volcanic black glass, from southern Ethiopia.



FARMS ON THE NILE

■ Introduction

Most ancient Egyptian farmers were not wealthy; therefore, they typically rented small plots of land from noblemen. Farming families generally lived in one story mud-brick houses often with only one room. The house might be furnished with wooden stools, reed mats, and a few pottery jars to carry water and store food. Outside in the courtyard would be the mud-brick bee hive-shaped ovens to bake bread, one of the staple foods of the Egyptians.

■ Family chores

The family worked together to do most tasks on the farm, though donkeys and oxen were used for heavy work. Boys helped in the fields while learning how to farm. Girls helped their mothers grind grain, bake bread, make meals, and weave cloth. During the harvest, all went to the fields to gather in the crops and help thresh and winnow the grain.

■ Plowing

As soon as the floodwaters from the Nile went down, farmers plowed their fields, before the sun baked the earth too hard to plow. Oxen were used to pull the plow, which was a heavy forked stick. In

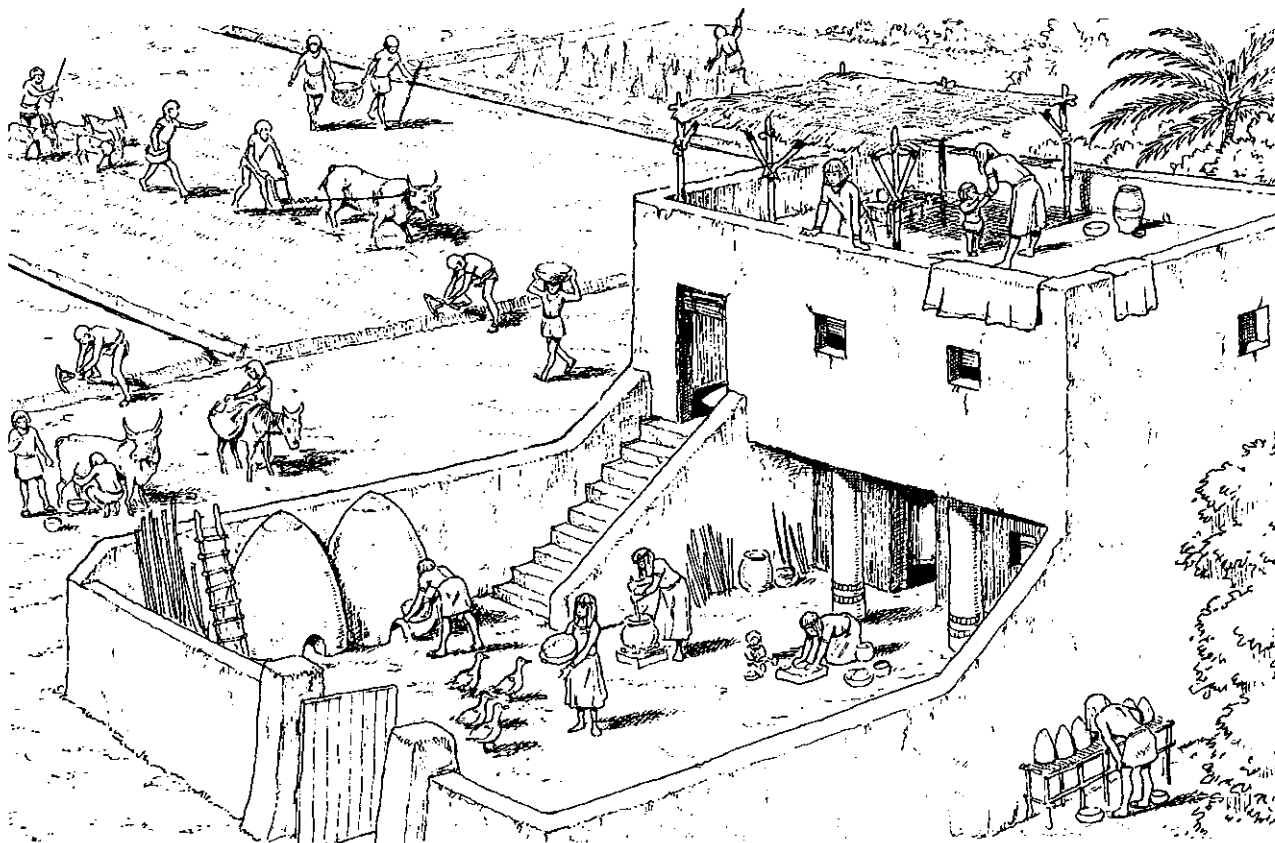
earliest times the plow was attached to the oxen's horns, but later a shoulder yoke made plowing easier. Hoes were used to break up the large clods of earth; then seeds were scattered on the soil. While the earth was still muddy, pigs or sheep would trample the seed into the ground.

■ Irrigation

Canals were dug to allow the water from the Nile to reach more of the fields. Ditches divided each field into small squares. Water was lifted into these ditches by a shaduf. A shaduf had a long pole balanced on top of a crossbar. On one end of the pole was a rope and a bucket; on the other end was a counterweight. Manually the bucket was lowered into the water. When full, the counterweight swung it up onto the level of the ground.

■ Harvesting

Flint-bladed wooden sickles were used in harvesting. The grain was taken to be threshed either with flails in human hands, or by the feet of oxen, donkeys, or sheep. Threshing separated the straw and husks from the grain. Then the separated grain was winnowed. Winnowing involved throwing the grain up into the air so the chaff would blow away.



PLANTS AND ANIMALS - 1

■ Ra's creation

Animals and plants were often themes in the religion, jewelry, sculptures and wall paintings of the ancient Egyptians. They were considered part of Ra's creation of order, and the earthly manifestation of many of the Egyptian gods.

■ Marsh, farmlands, desert areas

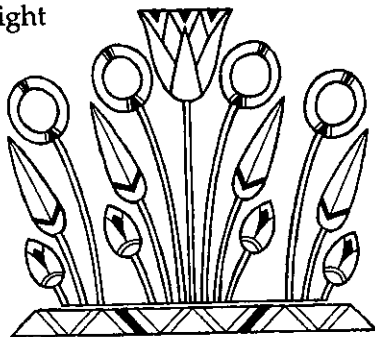
These three areas of Nile River and delta were home to a wide variety of plants and wildlife: papyrus and lotus (waterlily) plants, hippos, crocodiles, cobras, geese, ducks, ibis, cormorants, pelicans, Nile perch, and catfish. Near oases date palms, fig trees, and grapevines grew. While farmers tended herds of cattle, their farmlands grew barley and emmer wheat, flax, onions, garlic, leeks, beans, lentils, lettuce, melons, and cucumbers. The harsh desert areas east and west of the Nile River were home to vultures, falcons, jackals, lions, gazelles, and antelopes.

■ Papyrus

Thickets of this plant were common in marshy areas and along the banks of the Nile, a protective habitat for the waterfowl of the river. A versatile plant, Papyrus was used to make paper, sandals, boats, ropes, and even paintbrushes. The tender shoots of new plants were eaten as bamboo shoots are today. The hieroglyph of the plant was a symbol of "green"; it was used for such ideas as "flourish" "joy" and "youth."

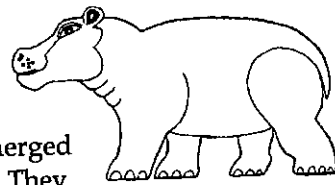
■ Lotus (waterlily)

Two types of lotus (waterlilies) were indigenous to ancient Egypt: the white (*Nymphaea lotos*) and the blue (*Nymphaea cerulea*). The sacred blue lotus was most commonly depicted in art and sculpture. Because waterlilies close at night and sink below the water only to rise again with the dawn, they became symbols of the sun and the creation from the waters of Nun.



■ Hippopotami

These large animals swam in the river, able to stay submerged for five to eight minutes. They were often underwater running on their toes across the bottom like inflated horses, or they floated near the surface with only their nostrils and eyes above water. Hippos would come ashore in herds to graze on the marsh vegetation and sometimes to devastate a farmer's crops. An ancient text reads, "Do you recall the unhappy lot of the farmer? When harvest time came, reptiles had taken half his crop and the hippopotami had eaten the other half." *Hippopotamus* is a Greek word meaning "horse of the river" or "river horse." Boatmen really feared this Nile animal. A bull could be 15 feet long and weigh as much as 8,000 pounds, but he was able to move through the water in short

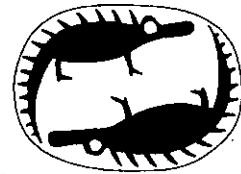


bursts of 30 m.p.h.. They were deadly when enraged, able to turn over large boats and crush sailors in their jaws. Tomb paintings show hippo hunts done much as whale hunting has traditionally been done, with harpoons and ropes.



■ Crocodiles

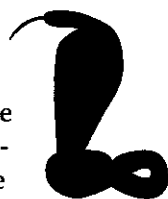
Also found in the marshy areas were crocodiles, many more in ancient times than there are today. Laundry, done at the river's edge, was a dreaded job for two reasons. First, since the Nile was considered a god, washing dirty laundry in the Nile made the god dirty. Those who defiled the god were considered ritually unclean. The crocodiles were the second reason Egyptians did not favor the job of launderer. They would stay submerged near the edge of the river and eat those trying to wash clothing in the water. It was traditional for those crossing the river in papyrus boats to chant spells so they might make it across without being eaten. Crocodiles were honored as the god Sobek and were often mummified in honor of the god of the Faiyum. Human mummies have been examined whose missing limbs appear to have been bitten off by crocodiles.



PLANTS AND ANIMALS - 2

■ Cobra

The Egyptian cobra or asp (*Naja haje*) was found throughout the Nile delta. Originally a sacred animal associated with the goddess Wedjat of the city of Buto, it became the symbol of all of Lower Egypt and of the pharaoh. In Egyptian art the cobra was usually shown rearing up with hood spread.



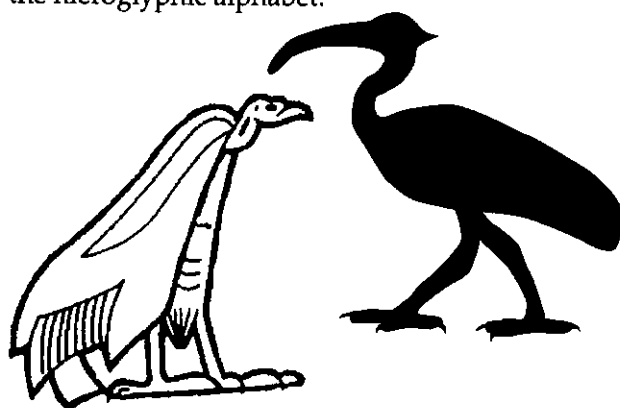
■ Waterfowl

Geese and pintail ducks were a favored food for wealthy Egyptians. The sacred ibis, storks, cormorants, pelicans, and herons were residents of the Nile River and the delta, feeding on Nile perch, tilapia and catfish. Although the Nile was teeming with fish, the wealthy did not eat them. Fish were considered ritually unclean and unfit for offering to the king and the temples or as meals for the dead. Regular Egyptians, however, ate what they had available, and sometimes all they had was fish.



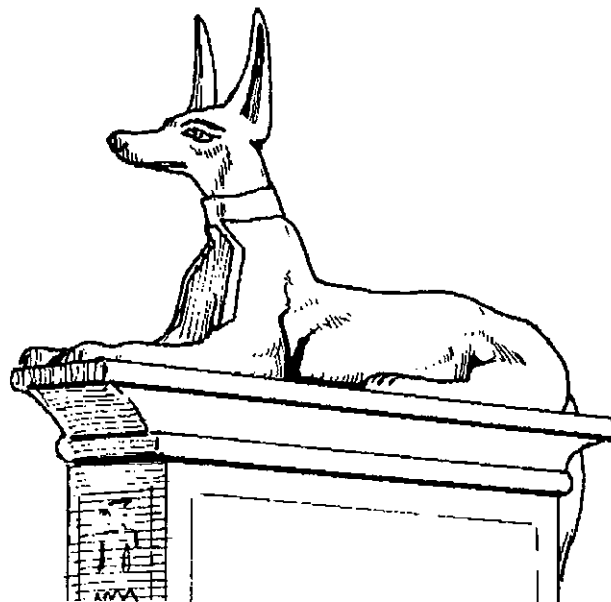
■ Desert birds and animals

Certain areas east and west of the Nile River were home to vultures, falcons, jackals, wild dogs, lions, gazelles and antelopes. At least five different types of vultures were known in ancient Egypt. A large bird similar to the griffon vulture (*Gyps fullness*) appears in most Egyptian art and as the representative of the goddess Nekhbet, the goddess of Upper Egypt. The so-called "Egyptian vulture" (*Neophron percnopterus*) represents the letter "o" in the hieroglyphic alphabet.

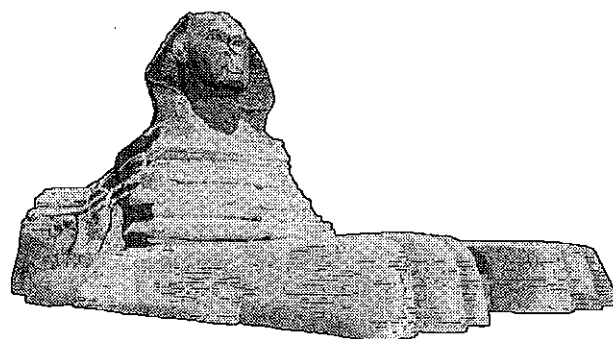


■ More animals

Anubis, the guardian of the Egyptian afterlife, might have been styled after the jackal, the wild dog



or a cross of the two animals that hung around the fringes of necropoleis and were seen to eat dead bodies. In ancient times, lions were found far down into Egypt, though now human population growth and industrialization has caused them to disappear from the lower reaches of the Nile. The Egyptians were very familiar with the lion as it stayed on the edge of the desert, seizing its meals from the herds grazing nearby. Considering the lion a noble animal, the Egyptians styled the sphinx in the form of



a lion and used lion metaphors to describe their pharaohs. As one text read, "Ramses II is a powerful lion with claws extended and a terrible roar." Finally, the antelope was seen as belonging to Set, outlawed and persecuted. However, the gazelle, a type of antelope, was associated with the cataracts of the Nile and sacred to Satis, Lady of Elephantine, and to Anukis, wife of Khnum and mother of Satis.



BOATS ON THE NILE - 1

■ "The road of Egypt"

For ancient Egyptians boats were the most important means of transportation along the "road of Egypt." Ships sailed up and down the Nile loaded with goods to trade. Traveling along the river was much easier than risking a journey through the unforgiving desert that borders each side of the Nile valley. Egyptians even thought boats were the transport of the gods. They believed that every 24 hours the great sun-god **Amon-Ra** made a voyage across the sky as though he were on the waters of the Nile. The Egyptians named their ships just as sailors do today. They called Ra's craft "The Boat of a Million Years." At night, they believed he sailed through the underworld of the spirits and emerged at sunrise each day from that forbidding, dark place.

■ Boats, boats, and boats

Many kinds of boats were used, from small ones made of papyrus to large boats made of wood. There were small cargo boats for carrying grain, rowing boats for transporting stones for pyramids, and state ships for honoring kings and high officials. When they traveled across the eastern desert for trade, hunting, or fishing expeditions, ancient Egyptians even carried their boats with them in pieces and assembled them on the shores of the Red Sea. Once put together, the joints or seams between the outer planks were caulked, or made watertight, by packing oiled papyrus reeds into them.

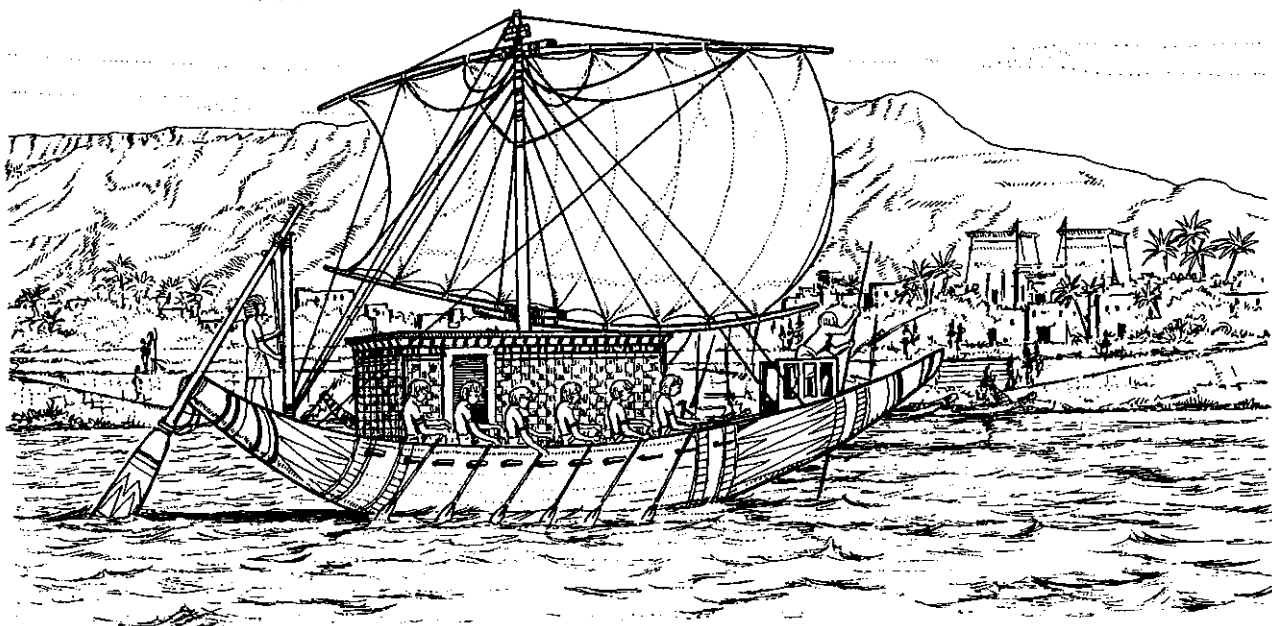
The first Egyptian boats were made of papyrus bundles, tied at both ends, and slightly curved at the top with a wider area in the middle of the boat. These were built over 5,000 years ago. Reed mats were placed in the middle of the boat to keep the inside dry. Simple papyrus boats were used by everyone: peasants, fishermen, hunters and by anyone traveling alone. Papyrus boats were pushed with a pole or with a paddle, and never had sails.

■ 1970: Ra 2

Norwegian scientist Thor Heyerdahl wanted to test the seaworthiness of papyrus boats. In 1970, he built Ra 2 from bundles of papyrus lashed together with rope. It took 57 days to sail from Morocco to the West Indies. This journey did not show that the ancient Egyptians made such a journey, but it did prove that papyrus vessels were capable of surviving long sea voyages.

■ Boats in paintings

Egyptian tomb and temple paintings show countless types of river and seafaring boats evolving through the centuries. By 2500 B.C. Egypt was building elegant river boats and ships of cedar wood imported from Lebanon. Carpenters used bronze tools to build these wooden boats, as Egyptians did not have iron. Wooden boats were much stronger than papyrus boats. Temple reliefs show large boats transporting huge columns and obelisks of granite from the quarries of Aswan.



BOATS ON THE NILE - 2

■ Wooden boats

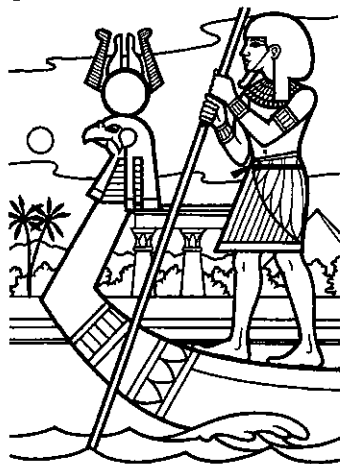
Wooden vessels were made by tying planks of wood together with rope. When the rope got wet it shrank, pulling the wood together and making the hull stronger. The earliest wooden vessels had masts made of two poles joined at the top. Six helmsmen, with six large oars, stood at the stern to steer the boat. The captain stood at the front, keeping a watchful eye on the river. He guided the boat on a safe course by shouting orders to the helmsmen.

■ The geography of the Nile

Although the Nile river flows north, there is a constant wind blowing south. Therefore, boats going north were pushed by the current, and the oars could be used without much effort. Going south required only raising a sail, and one could row with the same ease. Rowing benches were protected by raised side-planking. The Egyptians did not have rudders on their boats. Instead they steered using two large oars held by a seated sailor. The hieroglyph to travel south was a boat in full sail catching the northerly winds. The hieroglyph to travel north was a boat with the sail down. The Egyptians drove their ships with a single square sail. This was the only sort of sail used in Egypt until the Middle Ages.

■ Wooden galleys

Ramses III formed a navy of wooden galleys powered by oars and sails that he used to trap slower sailing ships invading from the Mediterranean Sea. The pictures of the battle on the walls of Ramses III's temple at Medinet Habu show that it was won not only by the ramming attacks of the Egyptians but also by hand-to-hand fighting to board and capture enemy ships. The ram was a forward-jutting extension of the ship's keel, usually armored with a heavy bronze cap in the shape of an animal's head. This battle technique would remain an important part of naval warfare for over 3,000 years, until long-range guns and explosive shells came into use in the nineteenth century.



■ Boats, death, and design

Boats were such an important part of Egyptian life that they were buried near the tombs of pharaohs for them to use in the afterlife. Models of funeral boats were often put in tombs in place of real ones. To ancient Egyptians, a model or a picture of an object was just as effective, for magic purposes, as the object itself. The special design of funerary boats imitated the boat used by Ra for his daily journey with the sun. The curved end pieces were similar to those on boats made of bundles of papyrus stalks. The color green on the side of the boat (the color of crops before they ripen) symbolized resurrection in the afterlife. The Eye of Horus, a symbol of protection and rebirth, was painted on the front of the boat, perhaps to look ahead and guide the dead pharaoh on his voyage in the afterworld.

■ The world's oldest ship

In 1954, an Egyptian archaeologist discovered a sealed pit just south of the Great Pyramid of Giza. Inside the pit was a boat over 140 feet long, the world's oldest known ship, thought to have been built for King Khufu. He probably ordered the 140-foot vessel, made of cedar from Lebanon, for his voyage to eternity. Cedar provided the largest logs for the biggest boats. The height of a cedar tree could range from 60 to 100 feet and the branches had a wide spread. Steered with 26-foot oars, King Khufu's boat may have glided in the funeral procession from the capital at Memphis to Giza. There the boat was taken apart and many of its 1,200 pieces were marked so that it could be rebuilt. Tests on the wood show the boat was used at least once. Buried in an airtight pit along with thousands of feet of rope, the boat is thought to have survived for 4,500 years. Khufu's boat is on display in a museum next to the Great Pyramid.

